

PATENT
450117-03755IN THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application. An identifier indicating the status of each claim is provided.

Listing of Claims

1. (Currently Amended) Method for recognizing speech, wherein in a preprocessing section (S2) a step of performing a variance normalization (VN) is applicable to a given or received speech signal (S) and/or to a derivative (S') thereof, said preprocessing section comprising the steps of:

performing a statistical analysis (S11) of said speech signal (S) and/or of a derivative (S') thereof, thereby generating and/or providing ~~statistical~~ statistical evaluation data (ED),

generating and/or providing normalization degree data (ND) from said statistical evaluation data (ED), and

performing a variance normalization (VN) on said speech signal (S), a derivative (S') and/or on a component thereof in accordance with said normalization degree data (ND)--in particular with a normalization strength corresponding to said normalization degree data (ND)--with normalization degree data having a value or values being in a neighbourhood of 0 with respect to a given threshold value indicating that no variance normalization (VN) has to be performed.

2. (Original) Method according to claim 1, wherein said statistical analysis (S11) is performed in an at least piecewise or partial frequency-dependent manner.

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3. (Previously Presented) Method according to claim 1, wherein said evaluation data (ED) and/or said normalization data (ND) are generated so as to reflect at least a piecewise frequency dependency.

4. (Currently Amended) Method according to claim 1, wherein said statistical analysis (S11) includes a step of determining signal-to-noise ratio data (SNR) ~~or the like~~, in particular in a frequency-dependent manner.

5. (Currently Amended) Method according to claim 1, wherein a set of discrete normalization degree values (D_j) is used as said normalization degree data (ND), in particular each discrete normalization degree value ~~of which~~ being assigned to a certain frequency interval ($f_j, \Delta f_j$), said intervals ($f_j, \Delta f_j$) having essentially no overlap.

6. (Original) Method according to claim 5, wherein each of said discrete normalization degree values (D_j) has a value within the interval of 0 and 1.

7. (Currently Amended) Method according to claim 1, wherein in each case a normalization degree value (D_j) being in a neighbourhood of 0 with respect to a given threshold value indicates to skip any variance normalization (VN) for the respective assigned frequency interval ($f_j, \Delta f_j$).

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8. (Currently Amended) Method according to claim 1, wherein in each case a normalization degree value (D_j) being in a neighbourhood of 1 with respect to a given threshold value indicates to perform a maximum variance normalization (VN) for the respective assigned frequency interval ($f_j, \Delta f_j$).

9. (Previously Presented) Method according to claim 1, wherein a transfer function between said statistical evaluation data (ED) and said normalization degree data (ND) is used for generating said normalization degree data (ND) from said statistical evaluation data (ED).

10. (Currently Amended) Method according to claim 9, wherein a piecewise continuous, continuous or continuous differentiable function ~~or the like~~ is used as said transfer function, so as to particularly achieve a smooth and/or differentiable transfer between said statistical evaluation data (ED) and said normalization degree data (ND).

11. (Currently Amended) Method according to claim 9, wherein a theta-function, a sigmoidal function ~~or the like~~ is employed as said transfer function.

12. (Previously Presented) Method according to claim 1, wherein said variance normalization (S14) is carried out by multiplying said speech signal (S), a derivative (S') and/or a component thereof with a reduction factor (R) being a function of said statistical evaluation data (ED), in particular of the signal noise, and the

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normalization degree data (ND), in particular of the normalization degree values (D_j) and/or in particular in a frequency-dependent manner.

13. (Previously Presented) Method according to claim 1, wherein a reduction factor (R) is used having the - in particular frequency-dependent - form

$$R = 1/(1 + (\sigma - 1) \cdot D)$$

with σ denoting the temporal standard deviation of the speech signal (S), its derivative (S'), a component and/or a feature thereof and D denotes the normalization degree value in question.

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